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CONTENTS.

	Page
Surgery for Pain. By Ernest Rock Carling, F.R.C.S.	81
Thirty Years' Progress in the Study of Rheumatic Heart Disease. By the late Carey F. Coombs, M.D., F.R.C.P.	93
Familial Multiple Telangiectases of the Skin and Mucous Membranes. By Gordon R. Scarff, M.B., Ch.B., F.R.C.S.	113
The Need for a Standard Method of Estimating the Blood-Pressure. By G. Arbour Stephens, M.D.	121
Reviews of Books	127
Editorial Notes	134
Obituary. David Samuel Davies, M.D., LL.D.	135
Meetings of Societies	138
The Medical Library of the University of Bristol	142
Publications Received	146
Local Medical Notes	147

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The Bristol Medico-Chirurgical Journal

" Scire est nescire, nisi id me Scire alius sciret."

SUMMER 1933.

SURGERY FOR PAIN.*

BY

ERNEST ROCK CARLING, F.R.C.S.,

Surgeon to Westminster Hospital.

THE autonomic system plays so immensely important a part in the " corpore sano " that the " mens sana " could not exist without its healthy functioning; in fact, of these two separate parts it makes one indissoluble whole. Besides the part played by bodily feelings in the contexts out of which our psyche is built up, there is another aspect of psychological contexts and their mnemic evocation which we cannot touch upon now, bound up with " feeling-tone "; vague feelings of perfect and imperfect adaptation, suitability, aptness, fitness or unfitness, pleasure and unpleasure, upon which the proper or imperfect

* Extracted from a lecture delivered to the Bristol Medico-Chirurgical Society on 8th February, 1933.

functioning of the autonomic system has inevitably and unceasingly a potent influence.

With "Perceptions" we are not now concerned, but I must say a word or two of the emotions, which are "constituted by bodily sensations instinctively originated"; the instincts being "primitive desires or inborn arrangements of the organism which lead it to respond to special situations in a special manner."

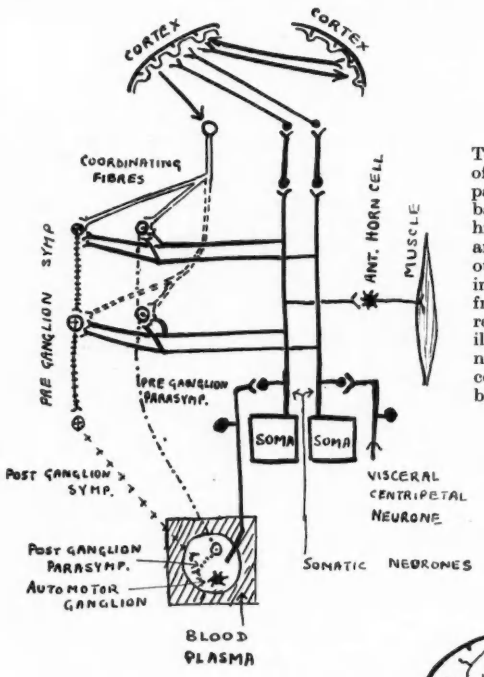
Instinctive responses to emotions such as "fear" and "rage" appear, at least in one aspect, as preparations for flight—*i.e.* escape—or for combat, and that preparedness is actuated through the autonomic system. Probably it is the same with other emotions such as "love" or "wonder," where "pleasure" takes the place of "unpleasure" or pain. The physiologist, who is only remotely concerned with pleasure and unpleasure, has also arrived at an interpretation of the functions of the autonomic system as serving preparedness for action; Hess even regards *sleep* as such a function. He presents the autonomic system as organized not only to maintain a balance amidst all the changing and conflicting demands of the organs and tissues, but also to secure general re-invigoration of the organism as an interdependent whole, through sleep.

I want to direct your attention to an aspect of the autonomic system which is evoked by our present train of thought and has a philosophic connection with present-day surgery of the system. The separability of the two halves of the peripheral autonomic system, sympathetic and para-sympathetic, is to-day a commonplace. I would remind you that every efferent fibre, unlike the efferent somatic nerves, has a cell station upon its path, for the sympathetic in

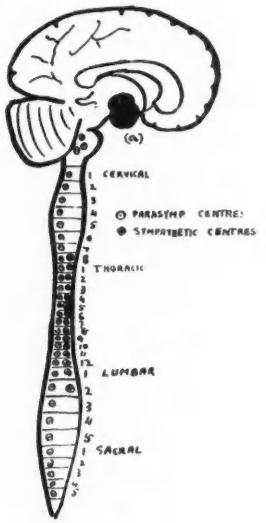
the para-vertebral ganglia—for the para-sympathetic in peripheral ganglia close to or in the tissues of the viscera. The effect of this is that an issuing impulse may be diffused over wide distribution, for pre-ganglionic fibres may influence, if not many cells in one ganglion, at least cells in many ganglia.

No doubt you are all familiar with the controversy over visceral pain, and are aware how little is known positively about the paths followed by afferent visceral impulses. None of us can doubt the existence of such impulses and paths, but experimental evidence is contradictory and conflicting. Afferent fibres, though they may travel in the interganglionic trunks, probably make no connections with cells of the para-vertebral ganglia—they are axons of cells in the spinal posterior root ganglia. It must be patent, therefore, that the removal of a ganglion, as such, will not affect the whole neurone liable to painful excitations—only in so far as the axons pass through the trunks and ganglia will the impulses be interrupted and the influence of ablation on the afferent will be likely to be far less extensive than that on the efferent field.

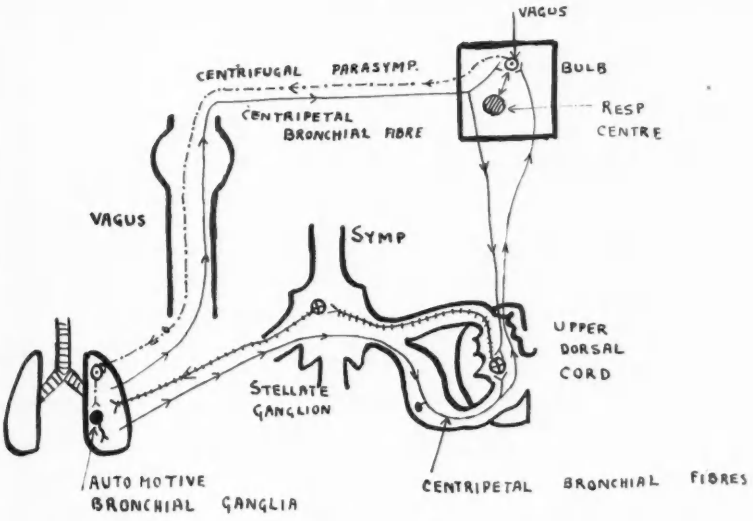
These diagrams are taken from Danielopolu to emphasize the endeavour of physiologists to abolish a common conception of the autonomic system as something isolated from the cerebro-spinal. It is suggested that the autonomic centres in bulb and cord are as subject to superior control as all other centres and cells therein ; that the subthalamic region represents a control, subject to cortical influence as we know, though the tracks of the connecting fibres have not been identified—a control that is not sympathetic or para-sympathetic, but as Danielopolu would say, amphotropic. He thinks not of opposed action of the two peripheral halves of the system, but of a tonus of



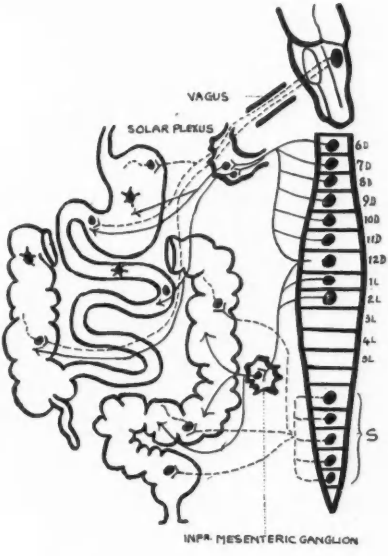
To illustrate the relation of the sympathetic and para-sympathetic, on the one band to the centres in the hrain-stem, the basal ganglia and the cortex, and on the other hand to the glands of internal secretion, and tissues from which metabolites reach the blood-stream. To illustrate also that the neurones, of which the axons convey afferent impulses, belong to the spinal ganglia of the somatic system.



To illustrate the situation of the cell centres of pre-ganglionic fibres and the thalamic control of autonomic activity (*a*).

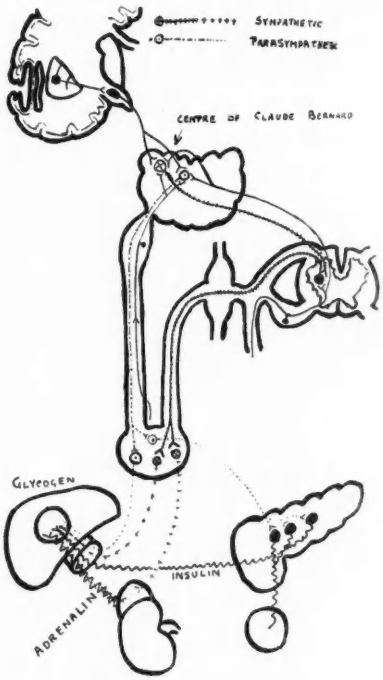


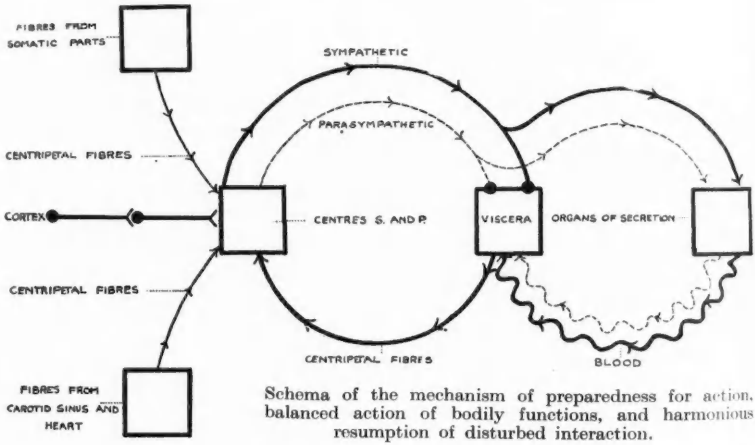
To illustrate the diverse paths of sympathetic and para-sympathetic fibers and their unifying centre in the bulb.



To illustrate sympathetic and para-sympathetic distribution to the gastro-intestinal tract.

To illustrate the essential part played by the internal secretions in completing and amplifying the function of the autonomic system; maintenance of the optimum environment for cellular and tissue activities in the face of all disturbing influences.





Schema of the mechanism of preparedness for action, balanced action of bodily functions, and harmonious resumption of disturbed interaction.

each which varies from individual to individual, and in each individual at times and seasons; in health or ill-health. He looks, too, at the other extremity of the system, and there finds the potent chemical agents — adrenaline, choline, insulin and others as yet unidentified, some of them specific in their action upon the terminations of the system itself, some of them bound up with metabolism—as inhibitors on the one hand or, one might say, "catalysts" on the other hand of tissue activity.

Since my subject was first chosen a shower of papers on the sympathetic has descended upon us, and there is nothing in my experience unrecorded elsewhere. Upon a general review, I conclude that the element of success in my operations is concerned with pain, the pain for which the patient seeks relief. So far as that is relieved—*permanently* relieved—the patient is satisfied and the operator is justified. I have had ulcers healed, gangrene arrested, the texture of the skin improved, attacks of local syncope and asphyxia minimized, but the success has always been imperfect, and sometimes wholly or in part evanescent.

It is probable that painful visceral and vascular sensations are entirely functions of unstriped-muscular contractions or stretchings, whether in the walls of the arteries and arterioles, or of the hollow viscera and ducts, or involve nerves of somatic distribution to covering membranes and adjacent tissues.

In so far as we relieve pain, then, by removing para-vertebral ganglia and intermediate or connecting rami of the sympathetic (and there is abundant experimental evidence of the efficacy of these interruptions in the results of reported operations, especially for pain initiated in pelvic viscera) we

relieve that pain partly, and perhaps largely, by cutting off *efferent* impulses, and that we know implies giving a free or freer rein to para-sympathetic stimuli. We are facilitating the washing away of accumulated histamin-like metabolites.

We know, too, that in respect to visceral distribution these two sets of opposing stimuli serve alternate functions; here the sympathetic is inhibitory, the para-sympathetic excitant—there the roles are reversed. Yet results seem to justify gross interference with what is normally a nicely-adjusted balance. Is there any theoretical or philosophic defence for such action? I think there is, and that it lies concealed in the very fundamentals of medicine.

I suppose that upon reflection all doctors will agree that by disease they mean departure from some standard of health. To define "health," as we have learnt, must be to chase a will-o'-the-wisp—it can only be defined for a given set of circumstances, for a given context, for a given age-period, for each several individual at a given moment.

It was Allbutt who put forward the idea, thirty-five years ago, that "health" is some stable relation between the whole of the bodily functions, activities and controls, and that after disturbance—by some mode of disease — a new stable state might be established in convalescence which differed in some respects as to the mutual relations of these functions and controls.

In our own day we have become so familiar with the term imbalance — for example, amongst the endocrine gland activities—and in our own field the autonomic system, that the relation of a stable,

balanced state to "health" is an easily-grasped and even convincing or obvious idea. Moreover, we are so familiar with the idea of alternative stability in stereochemistry and particularly in the molecular structure of the chemical constituents of our bodies—and also in relation to the orbits of electrons in the atoms of radioactive elements, that Allbutt's suggestion is now more than ever likely to be fruitful, and certainly, in the restricted field of our ganglion operations, it fortifies us in the feeling that when we interfere grossly, as we do, in the mutual action of the two sides of the autonomic control, and limit our interference to those cases in which we can discern a disturbance of quiet functioning, an *un*stable state, we may permit a resumption of successful relations, not at the old level or pitch, but at a new one which can harmonize with all the other constituents of total stability and establish a new position of health. Restored health after modes of disease, such as typhoid fever or nephritis or encephalitis or any gross disorder from which recovery takes place, is probably on a plane of stability different from the former, but not necessarily worse or more vulnerable.

At any rate, the more complete our knowledge of what we do when we operate the greater the refinement we shall be able to introduce in our proceedings, and the more readily will a fresh stable state be reached. It is obvious, when one thinks of such gross interference as removal of the stomach or the spleen, or a lobe of a lung or the thyroid, that the inherent powers of adaptation are very great, and if we remember the lower forms of life, such, for example, as the planarian worm, with its chains of ganglia, and consider the reformation of an intact and whole worm from a

random section, it is not astonishing that a good deal of disturbance of organs, tissues, controls and interdependent parts should be compatible with a different but a new mode of health.

One must not wait for or expect necessarily a series of named "diseases" for which ganglionectomy is *the* treatment. Whenever one is tempted to speak of "a disease" or to mistake the classificatory symbol of a mode of departure from health for an "entity," it is imperative to go back to the philosophy of our science before praying in aid the art of "healing."

Let me now turn for a moment to my method of dealing with intractable bodily pain originating in areas whose affected nerves reach the spinal cord—excluding, that is to say, the sensory cranial nerves. You are familiar with the operation of chordotomy, which involves section of the antero-lateral or spino-thalamic columns. This I have never done; it frightens me to think of identifying to a millimetre the required sector of the circumference of the cord, and then of dividing neither less nor more, to the precise depth necessary. The cord, at the bottom of a laminectomy wound is not an easy structure to deal with, and I have therefore sought a more facile method. In man all, or very nearly all, the fibres conveying painful stimuli decussate within a few segments, crossing in the anterior commissure. I suggest, therefore, a median division, entering the posterior sulcus, passing the central canal, and after dividing the commissure, stopping short of the anterior spinal artery which runs in the depth of the anterior fissure. If this division be made of three to three and a half inches extent it should sever all paths for pain entering at a given root level. I have performed it four times;

once in the cervical region for intractable and intolerable pain due to a sarcoma infiltrating posterior roots, twice in the dorsal region for gastric crises of tabes, and once in the lumbar region for rectal and genital crises.

The result in one of the gastric crises cases seemed to the patient a complete success, for though crises, *i.e.* attacks of vomiting, which did not distress him, recurred, they were entirely painless. The cervical region case was satisfactory to this extent, that on coming round from his anæsthetic the man declared his freedom from pain was "like being in heaven," and that he remained pain-free to his death, some months later, from the progress of his sarcoma. The other two patients died; one forty-eight hours after the operation, without any indication beforehand of shock and without any evidence at necropsy of defect in the operation—the division was exactly median and there was no bleeding. The other case—the lumbar region case—died fourteen days after operation of broncho-pneumonia, but I was partly responsible, for though the wound had healed by first intention, a little pus was found on the body of one of the vertebræ exposed, and also, I am sorry to say, the division was not exactly median in its deeper part. I do not think I should make that error again, for in this region, where the cord is more mobile, additional precautions must be taken to ensure secure holding during the incision. Several tension threads should be inserted at short intervals in the dentate ligament and held with great care.

To lose two out of four cases is, of course, very serious, but it must be remembered that both these men had suffered for years from very severe pain,

necessitating large doses of analgesics, and that both were drug sodden and very poor lives. Nevertheless, *qui s'excuse s'accuse.* I give you the facts, and in spite of them, urge those of you who have opportunity to give the method a trial. I have not published it, because upon four cases one cannot base an opinion of its merit, and it is rarely, indeed, that a general surgeon comes across cases that demand and justify so drastic a method.

The diagrams in this article are reproduced from D. Danielopolu in *La Pratique Médicale Illustrée* (G. Doin & Cie, Paris), to whom acknowledgment is due.

THIRTY YEARS' PROGRESS IN THE STUDY OF RHEUMATIC HEART DISEASE.*

BY THE LATE

CAREY F. COOMBS, M.D., F.R.C.P.

This lecture is printed as Dr. Carey Coombs had prepared it. It will be noticed that some of the paragraphs are personal remarks addressed to the Chairman, Dr. F. J. Poynton.

THIRTY years—to the very month—have passed since my election to the Medical Registrarship at St. Mary's Hospital. It is difficult to realize this, for I remember as clearly as if it had been yesterday that within the first few days of that invaluable experience I was waylaid by you, sir, at the door of De Hirsch Ward and—to my great delight—invited to interest myself in the work that you were doing then. I had already served as a clerk to Dr. Cheadle and House Physician to Dr. Lees; and had, moreover, been deeply interested by the work then being carried on by Dr. Paine and yourself; so that your invitation fell on ground that was ready to receive it. Whether the fruit that it has borne will be of value to anyone else is debatable; but I have no doubt that it has been of the greatest value to me. The subject furnished me with an introduction to cardiology, to the study of disease in children, to bacteriology and

* An advanced Lecture in Medicine read in the Medical School of University College Hospital on 14th March, 1933, by Dr. C. Bruce Perry.

morbid histology; so that the grain of mustard seed has given me a tree with many branches in which ideas of all kinds have found a lodging.

If I may for a moment continue to be reminiscent, the first step that I took, on your advice, sir, was that of analysing clinical notes, chiefly from Sir William Broadbent's old case books. Of the lessons taught by this study one in particular will serve as an opening to this address; namely, the changing character of the clinical picture of this disease. In those notes, drawn from the closing decades of last century, the type of case that predominated was the acute rheumatism of the young adult that was already, early in this century, becoming less common. This tendency has been maintained. We rarely see nowadays the adult type of acute rheumatism, with high fever, painful swelling of many joints, and severe but evanescent carditis. Rheumatic hyperpyrexia is almost unknown to us to-day, and pericardial friction is much less often heard than it was.

The main interest has steadily shifted to the rheumatic child with cardiac lesions. This is altogether to the good, for it is the cardiac lesions that matter, and it is in childhood that those lesions are most prevalent and most dangerous. One result of this changing outlook is, however, less fortunate, and that is the lack of a satisfactory nomenclature. We have learnt that this is an infective disease, and that its chief feature is a cardiac inflammation which may be complicated by various symptoms, especially in childhood, and by polyarthritis especially in adults. As Norman Moore put it in his Lumleian Lectures, it is a pity that we did not know this from the first, as we might then have labelled the disease cardiac and not rheumatic fever. In France the same

difficulty is experienced, and while there is a natural tendency to take refuge in the term "maladie de Bouillaud," after the versatile physician who described the disease so thoroughly a hundred years ago, we shall, I think, have more sympathy with the proposal of Bezançon and Weil, to reserve the term "maladie rhumatismale" for that which Dr. Reginald Miller has in this country, from the pediatric angle, designated "juvenile rheumatism." After all, this has the merit of following the course of events which has been all in the direction of separating different ætiological groups from the amorphous mass of disease vaguely covered by the term "rheumatism," and leaving that word to be used only for the group of which we are to think to-day. At all events, I have found it convenient to speak of cardiac rheumatism, just as one has grown accustomed to speak of pulmonary tuberculosis and cerebral syphilis.

This digression upon a matter of nomenclature is only justified by one fact; namely, the international nature of this disease. Already we have had a French view of the matter, and to this I add Alvin Coburn's "Rheumatic State" from New York. The one common feature is the word "rheumatism." Let us call the whole thing "rheumatism," qualifying this by adjectives such as juvenile, cardiac and so forth, where these are necessary.

But if this term is to be limited to a particular disease, what is that disease? Its individual mark is its capacity to produce a certain definite cardiac lesion, a pancarditis. Though this fact has been taught as fundamental by Dr. Poynton and others for over thirty years, it is still in danger of being mutilated by the use of such limited terms as rheumatic pericarditis, rheumatic endocarditis. These

terms tell the truth, but not the whole truth. The characteristic feature of the cardiac lesion is that all parts of the heart—valves, muscle, and serous investments — are simultaneously damaged. This fact has been fully elaborated by many workers since that paper published in 1899 in which you, sir, first described inflammatory foci in the myocardium. A few years later came the recognition, by Professor Aschoff, of the peculiar and characteristic nature of these foci, and this led us to perceive what I think had been hidden from us until then, that the basis of all these changes was a vascular basis. Further work has confirmed this, and proved that not in its acute phases only, but also in the chronic period, the whole range of the cardiac lesions is based on the coronary supply. Whether we tap that supply at the head or in the twigs one finds the same thing, an inflammatory reaction, mainly productive and tending to chronicity, attacking not only the connective tissue in the vicinity of the smallest twigs, but also the very trunks themselves (Perry). And what is true of the cardiac wall is true also of the aorta at its root, of the synovial membranes of the joints, of the pia mater, of the kidneys (Pappenheimer and Glahn), and also of that most rheumatic of all lesions, the subcutaneous node. The more one studies the histology of this the more does it appear to be vascular in its origin; to arise, in fact, from the impact of the infective agent upon an arteriole within whose lumen it has been detained. The most recent addition to this category of blood-borne lesions is the "rheumatic lung." Both Naish of Sheffield and Fraser of Bristol have figured inflammatory foci seen in the lungs of children dying of acute cardiac rheumatism which appear to conform in essentials

to the Aschoff nodule. Fraser, in common with Shaw and others, has also described similar foci in the neighbourhood of the rheumatic tonsil. There is, then, a steady accumulation of evidence to support a belief in arteriolitis as the essential lesion of rheumatism. And it is in the heart that this lesion finds its most characteristic as well as its most formidable expression.

This statement I make by way of justifying the basis which we adopted for certain recent researches into the ætiology of this disease. About fifty years ago a Bristol physician, Dr. Budd, the grandfather of my friend and colleague Mr. John Wright, making researches into the causation of typhoid fever, was constrained to use spot-maps; the first time, I believe, that this device had been used. That we used the same device was, I am afraid, no more than a coincidence; except that I have always felt that cities of moderate size, such as Bristol with its 400,000 odd inhabitants, furnished an excellent field for such inquiries. But this fact was not the only one that commended our area to those who were interested in such researches. We also had the ideal periphery in that it included seaboard, hillside and fenland; industrial as well as rural communities; limestone as well as chalk; and so on. We were also fortunate in being able to organize a team of medical men who took up the work with enthusiasm. Let me say here, in parenthesis, practical experience of the possibilities of voluntary co-operation between clinicians on the one hand and the State medical services on the other has convinced me that it is in this direction that we must look for a solution of our problem of organization, to a judicious blend, that is to say, of established order with individual enterprise.

Now, one of our difficulties was to define our unit. In other words, when we marked a dot on the map what was to be the exact meaning of the dot? How was one to define the disease under inquiry so as to reduce the margin of error to a minimum? One thing on which we agreed without much difficulty was to limit our inquiry to individuals with cardiac lesions. Our other limitations I do not propose to discuss; but on this one it is worth while to dwell, since it proves that when you subject this area of disease, with its rather nebulous margins, to the test of asking what is unmistakably and indisputably rheumatic, it is the cardiac lesion that you select.

Now, there are many points of ætiological interest that emerge from any study of the subject that accept this basis. Some of these are not in dispute. For example, I do not suppose that, in this country at all events, its predilection for the decade 5–15, and for girls rather than for boys, would be disputed. I have wondered whether the age incidence is the same in America, but in the other countries of Northern Europe both these generalizations appear to hold good.

Before passing on to some of the other factors unearthed or confirmed by this inquiry, I am going to allude to a negative fact which may, I think, prove to be important, and that is the freedom of all other animals from this disease. For some years past we have been trying to get hold of specimens of cardiac infection from other animals. Thanks to the kindness of veterinary colleagues, and also of pathologists attached to the Zoological Gardens of London and Bristol, we have been able to survey this field, I will not say exhaustively, but at all events broadly. The lesions which we have encountered have been and will be elsewhere described. Here

it is enough to say that we have nowhere met anything resembling cardiac rheumatism. Information given to me by Sir Thomas Lewis with regard to certain mitral scleroses in Dutch dogs led me to go to Holland and to interview Professor Schornagel of Utrecht, whose experience of disease in dogs is unrivalled. He showed me specimens of the lesion in question, but (although I have not yet had a specimen to examine microscopically) the naked-eye appearances are not those of cardiac rheumatism. They suggest a degenerative rather than an inflammatory process, and form no exception to the rule that cardiac rheumatism occurs only in man.

Now, before returning to our Bristol investigations let me speak briefly of other data which were revealed by this same visit to Holland. First, I was able to satisfy myself by conversations with Professor Christina de Lange and Dr. Stam at the Binnen-Gasthuis in Amsterdam that the juvenile rheumatism which they see there is exactly the same as that which we see here. In fact, on the morning when I called on Professor de Lange she had just been lecturing on subcutaneous nodes, and showed me some beautiful pictures. A second point which Dr. Stam's figures of admissions to hospital proved to me was that this disease constitutes a much smaller fraction of the total number of in-patients admitted to their children's wards than would be the case in London; and this in spite of the fact that Amsterdam is built on an archipelago—islands scattered in a maze of canals —the wettest city in Europe, not excepting Venice. But this question of the world distribution of rheumatic heart disease deserves a more careful scrutiny than it has as yet received. I do not think certain broad generalizations, for example, that in Europe the

disease prefers the countries that border on the North Sea, are likely to be disturbed. However, there is much to be gained, and nothing to be lost, by an international study of this matter, and you will be glad to know that preliminary steps in this direction have already been taken.

Now this reminds me of an analogy which may perhaps serve at this point to bring us back to our Bristol studies. Much of the time which I spent in years gone by on this disease was devoted to its morbid histology, and I remember clearly the look of the heart in which I first encountered the foci that Aschoff (unknown to me at the time) had already described. It was that of a young adult, and showed not only the usual and obvious fibrinous deposits both on valves and pericardium, but also a very definite dilatation of the ventricles. This superficial survey, I suggest to you, is the analogue of that glance that we have just taken at the map of Europe.

But if we are to know more we must look closer. In the case of the heart one had to cut out blocks, make and stain sections, and examine these under the microscope. The case of the map is not different, except that whereas it is possible to take many blocks from the heart for histological examination, it has so far been possible to take a few areas only for closer inspection. London (Kensington) was treated in this way by Fenton and Lightwood in 1927–28; Birmingham by Thomson in 1925–26; New York by Coburn in 1929; and Bristol by ourselves in 1927–31. Now, whether we think of our problem in terms of geography or of histology, it is the same kind of fact that we find; namely, a concentration within particular areas of that departure from the normal

which we call a "disease." Further reflection serves to carry the analogy a little deeper, for in the map, as in the section, it is not the cause of the disease that we see, but the reaction to that disease. Please remember that I have so far not gone beyond a low-power examination of these areas. At this stage it is the reaction that we are studying, but we are trying to learn from that reaction something about the nature of the disease. And what is there that we can claim to have learnt? If I speak first of the Bristol facts, please do not think me indifferent to the value of those unearthed elsewhere; it is only that those with which one is most familiar naturally impress one most. From a low-power study of that area two facts stand out. The first, a positive one, is that in the City of Bristol the incidence of this disease was five times as great as in the rural areas which surround it. The second, a negative fact, is of no less significance; namely, the absolute unimportance of physiographic differences—geology, altitude, contour and so on. All these were powerless to produce any particular localization of the disease within a period of three years. Whether this contrast between city and country holds good for other areas remains to be seen. Thanks to the help given by the Harmsworth Trustees, it has been possible to enlist the help of workers in other cities, and I have no doubt that when their data are assembled we shall derive from them results of the highest value. At the moment, however, I do not think we ought to go beyond this, that so far as our own area is concerned the disease is a disease of the big city.

Now, when we look under a rather higher power at this big city, this focus of infection, what do we see? The answer is decisive up to a point; namely,

an almost complete absence of the disease from certain areas and its concentration in others. These contrasts are susceptible of two kinds of explanation. That which has been generally adopted, in one form or another, regards them as expressions of a different soil. The reasons for this preference are twofold. In the first place, most of the thought devoted to the subject of rheumatic infection, in recent decades at all events, has emanated from pædiatrists, who are naturally apt to be preoccupied with the soil rather than with the seed. Then, again, we have been taught by the bacteriologists to indict for this offence a group of micro-organisms which is so diverse in the total range of its misdeeds that one cannot but think circumstances largely responsible for this versatility. These influences have kept our attention focused on the soil rather than the seed.

Now, however, we are being asked to consider more respectfully an alternative view; namely, that which interprets the concentration of cases in a particular area as a direct expression of saturation with micro-organisms. Here again we can discern two influences at work. The first is that of preventive medicine. Our public health colleagues have interested themselves in the question of rheumatism since the days of Newsholme, but within recent years, thanks largely to the influence of Alison Glover and the impetus given to this movement by Reginald Miller's address to the British Medical Association at Portsmouth in 1923, this interest has been greatly intensified, and I myself owe more than I can tell to the stimulation and help which I have received from my public health colleagues in the West of England.

But this is not the only breath of fresh air that

has awakened us to a realization of the opening that lies before preventive medicine in this field. There is a breeze blowing across the Atlantic from the shores of New England that has helped to stir up minds and thoughts that were perhaps in danger of stagnation. I am thinking particularly of the younger generation of Americans, Alvin Coburn in New York and J. R. Paul in Connecticut. These, with our own epidemiologists, are telling us that we must at least consider concentration of the infective agent as a factor determining the incidence of the disease.

This brings us back to the crux of the dilemma —is it the seed or the soil that matters ? The answer is that it is both. We are too apt to think of what we call diseases as clearly-defined phenomena, with sharp, clear-cut edges. That this is not true of rheumatism is only too obvious. Even the cardiac lesions, which we have chosen as lying at the centre of the rheumatic area, present difficulties ; for example, that of deciding where rheumatic carditis leaves off and ulcerative endocarditis begins. And if we pass to other parts of the area, for example to the articular province, we shall find the difficulties confronting our boundary commission greatly increased. Who is to say when a polyarthritis ceases to be rheumatic and becomes rheumatoid ? As Coates has shown, there is some association between cardiac disease of the rheumatic kind and rheumatoid arthritis. The same thing is true of that most " rheumatic " of all lesions, the subcutaneous node. Coates and I compared specimens taken from rheumatoid patients, from a man with chronic ulcerative endocarditis, and from straightforward cases of rheumatic carditis ; and we found them histologically indistinguishable from one another. It is clear from these considerations

that the edge of the rheumatic territory is not a hard black line, but a blur of many colours.

From this we may deduce a multiple ætiology. This bunch of phenomena that we call a disease is the outcome of interplay between many factors. It is true that these are still divisible into seed and soil, hammer and anvil, subject and object; but we are not to be surprised if we discover variabilities in each of these two groups.

But before glancing at these variations let us find out what is established and relatively constant. Now, to borrow another analogy from the histological picture, it is sometimes easier to discern what is happening at the edge of a focus than at its middle. Translating this into terms of our West of England area, I have found it difficult to learn much as yet from our map, except for the striking distinction between town and country of which I have already spoken, and a remarkable immunity of the well-to-do suburbs from the disease.

Now, it happened that during this field research there were two outbreaks of rheumatism in boys' schools. I saw something of both, and can bear witness to their essential similarity. One of them was thoroughly studied and carefully described by W. H. Bradley. Both outbreaks attacked boys living in good circumstances—well fed and housed, and in the country, well away from city conditions. In both instances waves of infection of the upper air passages by hæmolytic streptococci were followed, at an interval of about a fortnight, by the development of acute rheumatism in a percentage of the infected boys, with evidence of carditis in most cases. There was no doubt as to the widespread prevalence of hæmolytic streptococci; but only a proportion of

those from whom these organisms were grown showed local signs—tonsillitis, etc.—and of those who showed these local signs only a small percentage developed rheumatism. That is to my mind the most significant fact that emerges from these observations; and as it is corroborated by other experiences (Schlesinger, Sheldon and Collis), it may, I think, be accepted as a fact that of those who are infected by these streptococci only a few develop rheumatism.

Now, before applying this fact, exposed to us by the examination of the edge of the focus, let us assimilate another fact which these same experiences have brought to light; namely, that of the incubation period of rheumatism. An interval of about a fortnight elapsed between the throat infection and the onset of rheumatism, and this agrees well enough with experiences gathered from cardiac convalescent homes by Schlesinger, and Collis and Sheldon in this country and by Coburn in the United States. We shall need to notice this fact again presently. Now, however, let us see whether we can apply the other great lesson of these epidemics to the rheumatism which is endemic in our great cities.

As we have seen, this is particularly concentrated in certain areas. There is little doubt that this is determined to some extent by environment. A survey of the streptococcal content of a great city would be a colossal task, and I do not think anyone has attempted it. The nearest approach of which I know is that of Coburn who studied the throat flora of three groups of patients in New York for twelve months. All these cases showed a basic flora of streptococcus viridans, but there was also a considerable incidence of hæmolytic streptococci. This varied from month to month, but the variations in each group were

roughly the same. The moral of these observations is that between one area and another within the same city the streptococcal content does not vary anything like so widely as the incidence of rheumatism does. For example, the ward of Bristol which heads the list has twenty times as many cases per head of population as that at the bottom. Some of this difference is surely due to contrasts in environment. Probably these affect not only the health of the host but also the concentration of the infection. The pall of smoke that hangs over our great cities is significant not only because it cuts off the sun's rays, but also because it indicates defective ventilation by currents of wind; and I suppose there is no more powerful diluent of bacteria than these are. Glover in his Milroy Lectures brought forward much evidence supporting a belief in droplet infection, and stressed its dependence on defective ventilation.

However, we cannot leave this airy hypothesis to explain away all that is to be ascribed to environment. Much time and thought have been spent in a search for other factors. Housing especially has been accused, and in the attempt to find something which preventive medicine can attack stress has been laid on dampness. I do not propose to discuss at length this controversial subject, particularly as my own observations have led me to wonder whether after all the state of the house is of paramount importance. Some years ago we took out of the Bristol mortality records every case that could reasonably be regarded as rheumatic over a period of nearly forty years; and yet in all that mass of cases there were only eleven examples of houses in which more than one death had occurred as a result of rheumatism. In our more recent

investigations of living cases we found seventeen instances of more than one in a house in a total of 754 children. This does not look as if the house were of paramount importance.

However, let us concede its occasional importance. Take, for example, the case of a family of three children, previously healthy, who shortly after moving house all developed subacute rheumatism with cardiac involvement. The obvious inference is that these children walked into an infected atmosphere, and that this accounted for their troubles. The view that a familial incidence of rheumatism can be thus explained has been stated very persuasively on a basis of evidence ingeniously derived and carefully collected by J. R. Paul, who studied a certain number of families in which two or more individuals had suffered from rheumatic fever. Amongst children between 5 and 12 years of age and previously healthy 25–35 per cent. contracted rheumatism when another member of the family was suffering from an active phase of the disease.

But three considerations bid us pause before plumping for the epidemic hypothesis. First, there has been, so far as I know, no other case of rheumatism in that house. Second, in the two schools mentioned, where saturation with the infective agent was general, rheumatic lesions developed in a small proportion only. Finally, the familial factor may be independent of environment, as in the following family. The eldest member of the family, now aged 19, developed rheumatic heart disease while living in London at the age of 6. The family later moved to Bristol, and there two younger girls were found to be suffering from the disease at the ages of 8 and 4 respectively. All the evidence points to the fact that the two

younger children were infected at different times and not together.

But it is perhaps too precipitate to speak yet of a familial factor. Let us for the moment be content to admit that the development of rheumatism in a few only of those who were exposed argues the existence of an inherent factor. Before coming to closer grips with this, we must look briefly at the trend of bacteriological thought in relation to rheumatism.

Prior to the year 1900, when you, sir, with Dr. Paine first described your findings of a diplococcus in the blood and joints of rheumatic fever patients, many different workers had found almost as many different types of organisms in rheumatic lesions. The only finding to be repeated and which claimed any serious attention was that of Achalme, who grew a large gram positive bacillus from rheumatic fever patients both during life and after death. Since that time the main bacteriological interest has centred on the diplococcus or streptococcus described by Dr. Paine and yourself. Many workers have repeated your experiments with varying success, the one constant feature was that practically in every case in which an organism was found that organism was a streptococcus. In 1906 Andrewes and Horder described their sugar reactions, and showed that the diplococcus rheumaticus very closely resembled the streptococci commonly inhabiting the alimentary tract. We were then faced with the problem of how an organism of such low virulence, whose habitat was the normal alimentary canal, could produce such a virulent infection as rheumatic pancarditis. Such was the state of affairs until about 1926, the streptococcal theory gradually gaining ground in the

absence of any serious opponent. About this time Swift and his colleagues in New York showed that the non-hæmolytic streptococci produced a very peculiar hypersensitive condition in rabbits. In this state minute injections of streptococci, much too small to produce any recognizable lesion in a normal animal, are followed by a marked inflammatory reaction. Further, it was found that animals sensitized to one strain would react abnormally to a different as well as to the sensitizing strain of organisms. Kaiser showed that in about 75 per cent. of children with a history of rheumatism the skin was hypersensitive to a filtrate of the an-hæmolytic streptococcus, whereas in children with no history of rheumatism not more than 35 per cent. were so sensitized. We were thus introduced to the view that rheumatism may be the response to a streptococcal infection in a patient previously sensitized to that organism. Coburn's work, which has been confirmed by Schlesinger, Sheldon and Collis, and the school epidemic I have described to you, shows that in certain cases a naso-pharyngitis caused by a hæmolytic streptococcus is followed by rheumatic manifestations after an interval of about ten to twenty-one days. Thus we see the streptococcus more and more implicated as the causal factor. Which type of streptococcus is responsible and in what manner it stimulates such a severe reaction on the part of the tissues is as yet not clear. This allergic view, however, throws some light on the predisposition of certain children and families to infection that we have already noted. Further work will show whether we are to blame the hæmolytic or non-hæmolytic strain or possibly a combination of the two. This bacteriology has an important bearing on treatment. It is difficult to see how we are to

abolish such ubiquitous an organism as the streptococcus. Neither do we know of any drug exerting such an action on this group of bacteria as that of quinine on the malaria parasite. Salicylates, it is true, do influence favourably such exudative manifestations of rheumatism as the arthritis. On the proliferative lesions, such as the subcutaneous node, however, and the all-important carditis, they would appear to have little if any effect.

We turn to the other participant in the quarrel, the predisposed or affected child. How are we to assist him in his fight against the infection? This may be considered under two headings. We may attempt to close the portal of entry against the infection, or we may assist in the resistance put up against infection when it has gained access to the body. It has long been recognized that the onset of rheumatism is frequently preceded by an acute tonsillitis. From this it has been argued that, in some cases at any rate, the tonsils are the site through which the infection enters the circulation. However, rheumatism not uncommonly makes its first appearance in children whose tonsils have already been removed. In addition tonsillectomy does not prevent a relapse of carditis in a child already affected. Thus wholesale tonsillectomy is not going to be any help to us in our efforts to prevent the disease. Dr. Reginald Miller, however, has shown that in tonsillectomized children the infection tends to be less intense, and that chorea without carditis is more common in such children. The tonsils are only one of many aggregations of lymphoid tissue along the alimentary canal, and it is probable that all are equally effective as points of entry for the offending organism. It is interesting in this connection to recall the abdominal symptoms

which sometimes occur just before or at the onset of an attack of rheumatism. Older observers often referred to these, and they have been given prominence lately by the reports of Giraldi and others, and by your own observations, sir, on rheumatic appendicitis. When we turn to the patient's resistance, however, we are on more hopeful ground. Perhaps we may digress a little first to consider how the study of rheumatism as a cardiac disorder has altered our clinical picture of the disease. The acute arthritis which was the aspect of the disease first recognized presents a sudden onset with an equally sudden subsidence. Not so, however, the carditis. We have learnt to look on this as a long-drawn-out, smouldering infection, ever ready to burst into flames at the least provocation. One of the great difficulties in treating these patients is to know when the infection may be considered at an end. Its course is so insidious that the physical signs, temperature, and pulse-rates help us little. Although a definite leucocytosis accompanies the infection, it is often so low that its low limits coincide with upper limits of normal. For this reason it is unwise to place much reliance on this factor. Gain in weight we have found to be of the greatest value, as also has McCullough. More recently we have been studying the sedimentation rate of the red-blood corpuscles, and in this phenomenon it would appear that we have a most valuable guide in our treatment of rheumatic carditis. The protracted nature of the infection presents many analogies to tuberculosis. In tuberculosis we rest the affected part and build up the patient's resistance with good food, fresh air and sunshine. So, too, with rheumatic carditis; the heart cannot be rested completely, but we can see to it that as few demands as possible are

made on it by keeping the patient at rest in bed for as long as active infection persists. Thus we have come to treat rheumatic children in hospital schools. Here they rest their damaged hearts, away from the detrimental environment of their homes, and in addition their minds are kept occupied and their fingers busy. Our experience of our own hospital at Winford is too recent to give you any statistics as to cures and improvements, but of its value we are certain. You may be surprised that I said cures, but rheumatic carditis does recover, at least to the extent of the disappearance of all abnormal physical signs. A fact which you, yourself, sir, have confirmed. It is this fact which encourages us to go on in the belief that one day cardiac rheumatism will be prevented.

FAMILIAL MULTIPLE TELANGIECTASES OF THE SKIN AND MUCOUS MEMBRANES.

BY

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Case 1.—A man, F. S., aged 30, a baker, was sent to see me in April, 1930, complaining of intermittent epistaxis which had started in childhood and which had become more frequent and severe in the last twelve months.

On examination, both nostrils were filled with blood clot, and there was also some purulent discharge present. After removal of this, the nasal mucosa was found to be congested and there were a number of dilated veins present on the anterior part of the septum, extending over a wider area than is usually seen in cases of epistaxis. There was some degree of deflection of the septum to the left, but otherwise nothing further abnormal was noted in the nose or throat, and there was no evidence of accessory sinus infection.

Both sides of the septum were cauterized under local anæsthesia, but despite repetition of this on three occasions during the next six months, the bleeding recurred. He was then admitted to hospital, and a complete general examination made, but no organic disease was found beyond a slight secondary anæmia. The blood picture otherwise showed no abnormality; coagulation time was normal; Wassermann reaction negative. While in hospital he had no further hæmorrhage, and was discharged after five days.

He had no serious recurrence for another twelve months, when he came to see me again. On this occasion it was noticed that he had developed several small angiomata on the skin of the face, the lower lip and the dorsal surface of the tongue, and he stated that his father suffered in the same way. Since that time he has had several small hæmorrhages from the nose, and also slight bleeding from hæmorrhoids. The spots on the face are painless, and vary in size and character, some being simple dilatation of the small vessels of the skin, others having a central dilated vessel surrounded by a stellate network

of vessels, while the fully-formed spot is raised above the surface of the skin, and is round or oval in shape, with a sharply-defined margin, varying in colour from bright red to purple. Those present on the lips and tongue are of the last type. He has also lately developed a few small telangiectatic spots under the index and middle finger nails of the right hand.

Case 2.—F. S., aged 57, father of the above, was also sent to see me at my request in October, 1931, when I found that he also had multiple angiomata of the face, lips and tongue, and abnormal dilatation of the vessels of the septa mucosa. He had several small telangiectases on both hands situated on the pulp of the fingers and under the finger nails. He had suffered from childhood from recurrent epistaxis, while the other spots had developed since the age of 30. He had marked pyorrhœa, and his gums tended to bleed readily, and he suffered to a slight extent from hæmorrhoids, but beyond this there was nothing abnormal detected.

Case 3.—His brother, P. S., aged 63, was also examined, and a similar condition was found.

Blood picture: Wassermann reaction, negative; red cells, 5,210,000 per cub. mm.; hæmoglobin, 76 per cent.; colour index, 0·74; leucocytes, 7,600 per cub. mm.—neutrophile polymorph, 64 per cent.; eosinophile polymorph, 2 per cent.; basophile polymorph, 0 per cent.; lymphocytes, 29 per cent.; large mononuclear, 5 per cent. The film shows normal features. Coagulation time, somewhat increased.

Blood picture, after a moderately severe epistaxis: Wassermann reaction, negative; red cells 4,260,000 per cub. mm.; hæmoglobin, 55 per cent.; colour index, 0·64; leucocytes, 7,600 per cub. mm. Differential count was the same as on the previous occasion. Nothing further of abnormality was noted, except occasional bleeding from hæmorrhoids.

Case 4.—A. H., aged 59, a married sister of the above, was referred to me by the late Dr. Carey Coombs two months later on account of recurrent epistaxis, which had started in childhood. She had been sent up for treatment for osteoarthritis of both knee-joints. On examination she was found to have a similar condition of the face, lips, tongue and fingers, but the spots were much fewer in number than in the two previous cases. The septal mucosa was markedly congested, and there was a considerable amount of crusting

present. At the time of the examination a slight touch of the septal mucosa was sufficient to start bleeding, but since treatment with a mild antiseptic oil hæmorrhage has been much less easily provoked.

Cases 5 and 6.—Since that time I have had referred to me, independently, for epistaxis, a boy aged 8, the son of P. S., and another boy aged 8, grandson of A. H. In neither case was there any marked infection of the tonsils, nose or nasopharynx, and there was no tonsil or adenoid hypertrophy, but there was dilatation of the vessels on the anterior part of the septum, in no way dissimilar from that frequently found in children suffering from nasal obstruction. In addition, the second boy had a small telangiectatic area of the skin over the zygoma on the right side.

Cases 7 and 8.—I have also seen a daughter of A. H., G. C., aged 42, and her daughter, aged 17, both of whom suffer from recurrent epistaxis, the mother having several telangiectatic spots on the face, but not elsewhere.

Clinical Features.

These patients, and others whom I have not yet seen, are all descendants of one woman, M. S., who died some years ago at the age of 65, and who, it is stated, herself showed angiomatous swellings of her face, lips and tongue, and suffered from recurrent epistaxis.

So far as can be ascertained the condition was not present in either her father or mother. The family tree (see p. 119) shows that up to the present time her descendants number twenty-six, of whom fourteen suffer from recurrent epistaxis, and the nine older members show multiple angiomata (one daughter, who died of influenza aged 40, also showed the condition). It will be seen that both sexes are affected, and that both sexes transmit the tendency, and although in one case a grandson has escaped, it is appearing again in the great-grandson.

The sequence of events has been the same in each

case. The child is born healthy, and shows nothing abnormal until the age of 7 or 8 years, when he or she begins to suffer from recurrent epistaxis, the attacks recurring at varying intervals of days, weeks or months. Except in the small boy previously mentioned, no further development appears to take place until about the age of 30, when telangiectatic spots appear on the face, lips and tongue, which increase in size for a time, and after that remain stationary. There is occasional bleeding from the spots on the mucous membrane. Apart from a secondary anæmia after severe epistaxis, the condition does not give rise to any constitutional disturbance.

In the cases examined the blood picture is normal, and in none of the family is there prolonged bleeding after cuts or injuries, nor any tendency to ecchymoses after slight trauma. The male members show a tendency to bleeding from hæmorrhoids. Menstruation in the females is normal. There is no menorrhagia or metrorrhagia. In the case of the married members labours have been normal, and there has been no excessive pre- or post-partum hæmorrhage.

This family is an addition to the number of cases of this rather rare condition which has been already published by various authorities.

The condition was first described by Rendu,[1] of Paris, in 1896, and again by Osler,[2] in America, in 1901, and again in England in 1907.[3] Notes on a third family were published by Parkes-Weber,[4] in 1907. Cases have appeared intermittently in the literature since then, and in 1931 Goldstein[5] published a descriptive summary and bibliography of all the published cases, ninety-five families, involving over five hundred persons. He termed the condition "heredo-familial angiomatosis with recurring

hæmorrhages (Rendu-Osler-Weber's disease)." Two further cases have been reported this year by Aubertin, Lévy and Mme. Baclesse.[6]

All the cases reported correspond closely with those of the present series in their main points, viz. :

(*a*) The disease is definitely hereditary and familial.

(*b*) The average proportion of persons affected in each family is one in three, but may be as high as eight in eleven.

(*c*) The condition has been observed in three, four and five generations.

(*d*) The condition occurs in, and is transmitted by, both sexes, although on the whole a slight predominance in females has been observed.

(*e*) There is no family history of syphilis, alcoholism or hepatic disease.

(*f*) In all cases the affection is divided into two stages ; the first stage commencing in childhood, and taking the form of recurrent epistaxis ; the second stage of angiomata of the face, lips, mouth, tongue and fingers, commencing between the ages of 20 and 30. The angiomata are similar to those described in the present series.

(*g*) In all cases, except for secondary anæmia, the blood picture is normal. There is no excessive fragility of the red corpuscles. The number of blood platelets and the amount of blood calcium is normal. Coagulation time and bleeding time occasionally show delay, but only to a very slight extent. There is no purpuric condition present.

Although in the majority of cases these are the only manifestations, further symptoms have been observed in some cases, viz. :—

(i.) The condition may be present on other parts of the body, especially on the fore-arms and hands.

(ii.) Hæmoptysis has occurred in some cases from the larynx or bronchi, and a case of fatal hæmorrhage from the larynx has been recorded.

(iii.) Hæmatemesis has occurred with no sign or symptom of gastric ulcer, and telangiectases have been found in the mucosa of the stomach at autopsy.

(iv.) Hæmorrhages may occur from the rectum and anal canal.

(v.) Varicose veins are a frequent occurrence in the later stages of the disease.

(vi.) Metrorrhagia is occasionally present.

(vii.) Some enlargement of the liver or spleen, or both, has been noted in a few cases, but in these only occurs in the late stages after prolonged secondary anæmia due to frequent severe hæmorrhages.

Pathology.

In cases where sections have been cut at autopsy the structure of the spots is found to be a simple blood space immediately under the epithelium, lined by endothelium, and supported by a small amount of connective tissue. There are no supporting muscle or elastic fibres, and the epithelium over the space is thinned but otherwise normal. Weil[7] has put forward the view that the condition is due to either a primary blood or hepatic dyscrasia. Evidence, however, against this view is supplied by the fact that in the cases described, and in practically all others reported, no abnormality of the blood has been found; nor in the present series has there been any clinical evidence of hepatic or splenic enlargement. Moreover, in the cases of this series where the Van den Bergh reaction has been performed this has shown a completely negative result, that is, no abnormal hæmolysis is taking place in the blood-stream. The

M. S. ♀ died æt. 65.
? cause—not hæmorrhage.
P. S. ♂ æt. 64.
♂ æt. 8.
C. S. ♀ died æt. 54. influenza.
A. H. ♀ æt. 60.
F. S. ♂ æt. 58.
W. S. ♂ æt. 50.
C. S. ♀ died æt. 40 ? cause.
D.S. ♀ æt. 31.
F.S. ♂ æt. 32.
♀ æt. 20.
♂ æt. 18.
♀ æt. 4.
♂ æt. 1.
♂ æt. 2.
♀ æt. 42.
♀ æt. 18.
♀ æt. 38.
♀ æt. 16.
♂ æt. 14.
♂ æt. 36.
♂ æt. 8.
♀ æt. 6.
♀ æt. 34.
♀ æt. 6.
♂ æt. 2.
♂ æt. 31.
——— = Recurrent epistaxis.
═══ = Recurrent epistaxis and telangiectases of the skin.

condition would appear to be simply a congenital weakness of the walls of the smaller vessels with deficiency in muscle and elastic tissue support.

Diagnosis.

In childhood the cause of the epistaxis can only be ascertained by inquiry into the family history. In adults the appearance of the spots and the normal blood picture serve to distinguish the condition from one of hæmophilia, purpura or multiple nævi.

Prognosis.

The condition appears to be compatible with fairly healthy life, and does not seem to shorten life to any great extent. Of the recorded cases only five have died from hæmorrhage.

Treatment.

This is limited to treatment of the secondary anæmia and to treatment of the epistaxis when it occurs. Prolonged treatment by a mild antiseptic nasal oil, by keeping the nasal mucosa in a healthy state, appears to lessen the number of hæmorrhages, but application of the cautery does not seem to prevent recurrence in another situation.

My thanks are due to Dr. Hassard and Dr. Milling for their help in tracing different branches of the family.

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THE NEED FOR A STANDARD METHOD OF ESTIMATING THE BLOOD-PRESSURE.

BY

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Two facts stand out very prominently in connection with the present method of estimating the blood-pressure.

The first is that the estimation of the systolic pressure varies with the width of the armlet, and the second is that the figure given as the *normal* diastolic or basic figure varies from 55 mm. to 85 mm. Hg., according to the observer.

As I have already pointed[1] out, the normal systolic pressure estimated by means of a 4-in. armlet equals 120 mm., with a 3-in. armlet it equals 135 mm. and a 2-in. armlet gives the figure as 150 mm. Hg.

So long as the width of the armlet be given it is immaterial what is the width, because the figures can all be reduced to a common denominator, but in my opinion it is far better to have one size of armlet common to all sphygmomanometers.

The marked variation in the figures given as the

normal diastolic or basic pressure is of far greater consequence. For if the experts differ to such an extent, how can the ordinary practitioner hope to arrive at anything like a useful figure ?

The systolic pressure is a measure of the force exerted by the heart pump. But, in addition, we must know the resistance against which the work of that pump has to be done, if we are to arrive at any prognosis with regard to the heart. To estimate merely the systolic pressure is most misleading ; for although the systolic pressure be low, the resistance against which the heart has to work (which is measured by the basic pressure) may have been raised. Even when the basic pressure remains normal, and the systolic pressure falls, the ratio of one to the other is considerably modified, and this must be taken into account.

This point becomes more evident if we take actual figures, as in the following cases. By my method the normal figures are 150/50. If, then, the pressures are 100/50, it follows that the weakened heart has to pump against a resistance as great as the normal heart has to overcome. If the pressures are 150/80 the "normal" heart in this case has to work against an increased resistance (measured by a basic pressure of 80 instead of 50), and naturally tends to fail. This is the state of things which occurs in coronary thrombosis, and can only be estimated by taking both the systolic and the basic pressures.

It is necessary to realize that when the pressures are 150/80, in order to overcome the increased

peripheral resistance the systolic pressure needs to be 240 mm. Hg. to maintain the circulation of the blood.

Under such an increased pressure the blood cells, although driven round the circulatory system, are seriously handicapped in their work, because the pressures are so high. Blood cells, both red and white, need an optimum pressure under which to live, move, and have their being satisfactorily, and to do their work properly. This pressure is one of 150/50 mm. Hg. Any increase or disturbance of that ratio affects their surface tension and consequently their osmotic processes, together with their interaction with the cells of the tissues.

My method of estimating the blood-pressures is as follows :—

1. Place the armlets (2 in. by 11 in.) of two sphygmomanometers on one arm, the one below the other.

2. Inflate the upper armlet until the pulse ceases to be felt, when the reading on the upper dial gives the systolic pressure.

3. Inflate forthwith the second armlet until the needle on the upper dial is moved upwards a point, when the reading on the lower dial gives us the basic pressure.

My method is mechanical and objective, and requires the minimum of skill and judgment, whereas the auscultatory method depends on the capacity of the doctor to detect and discriminate between various sounds which are not readily heard.

There are limitations to the auscultatory method, such as :—

1. In cases of irregular hearts, when there is a difference of intensity between successive sounds.

2. The arm may be too thickly covered with fat.

3. There may be no artery large enough to auscultate.

4. Many doctors have no ear for differences of sound, and are unable to detect the right sound at the right time, even if there be a right sound.

FIG. 1.—Shows that the inflation of armlet gives an estimation of the pressure in the direction of the arrow.

FIG. 2.—Shows that when the armlet is inflated for such an estimation, pressure on the artery at the point of the arrow sends the dial needle upwards. This effect is shown in the lower diagram in FIG. 2, when the pressure sufficient to indent the wall is conveyed both upwards and downwards along the full artery.

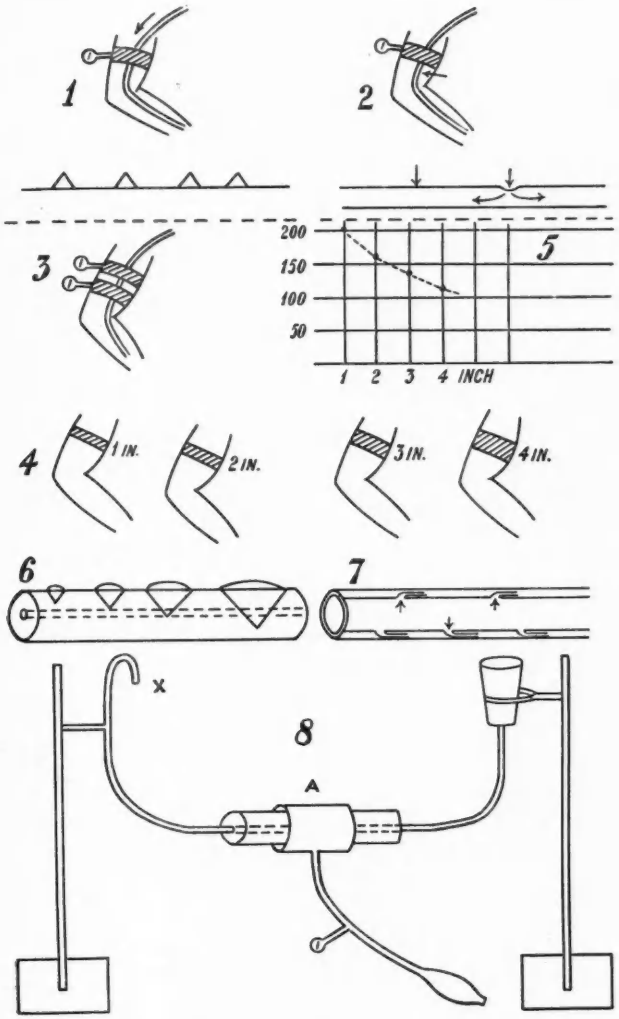
FIG. 3.—Shows the position of the two armlets, which cannot be more than two inches wide, else they cannot both be applied at the same time.

FIG. 4 and FIG. 5.—Draw attention to the several widths of armlets and the corresponding differences in the estimations.

FIG. 6.—Is to explain how the same pressure in the several widths produces wedge-shaped pressures of different sizes.

FIG. 7.—Is to show how an increased pressure in the artery compresses the mouths of the *vasa vasorum*, and by so doing interferes with the entrance of the blood into these vessels for the supply of the arterial walls.

FIG. 8.—Is a diagram of an experiment which showed that whilst it took a pressure of 80 mm. Hg. in the armlet A to stop the water flowing at X, the pressure in the armlet A



By courtesy of the Medical Society of London (*Transactions*, Vol. 55).

had to be reduced to 60 mm. Hg. before the water restarted flowing.

This lower pressure is due to the resiliency of the tube wall, and is the one that is so often wrongly taken for the so-called "diastolic" pressure.

REFERENCE.

[1] Arbour Stephens, *Heart and Spleen in Health and Disease*; H. K. Lewis & Co. Ltd., 1932.

Reviews of Books

Idols and Invalids. By JAMES KEMBLE, Ch.M., F.R.C.S. Pp. 210. London: Methuen & Co. Ltd. 1933. Price 6s.—This is a series of essays concerning the private lives of certain notable persons. The author discusses the lameness of Byron and its effect on his character, and speculates as to the nature of his last illness. He shows how a stone in the bladder ruined Judge Jeffreys's temper and reputation, gives us a catalogue of the mistresses of Louis XV with some notes on the King's health, and explains the patriotic motives underlying Cleopatra's seduction of Cæsar and of Antony. Where he surveys well-documented ground, as in the life of Nelson, his medical opinions are interesting and instructive. With Byron and Queen Anne he is less convincing. Christopher Columbus, Henry VIII, Cesare Borgia, and "Bloody" Queen Mary (among others) he pronounces syphilitic: unless the grounds for this diagnosis, which he suppresses, are far more convincing than those he reveals, we feel that only the laymen among his readers will admit the decision probable, let alone proved. An amusing and readable book.

A Short History of Surgery. By Sir D'ARCY POWER, K.B.E., F.R.C.S. Pp. 91. London: John Bale, Sons & Danielsson, Ltd. 1933. Price 3s. 6d.—This series of little books gives brief histories of anatomy, physiology, and other subjects, and into these ninety pages Sir D'Arcy has had to compress the long story of surgery. It is marvellous how much he has included in them, and how fascinating are the sketches he has drawn. The story of the work of Cheselden and still more that of Lister and his followers are full of facts unknown to most of us. Then we have the charming tale of the first great operation under ether in 1846, and that of Pepys the Diarist being taken into a friend's house to be "cut for the stone" in 1658, resolving to give an annual feast in memory of their kindness. Sir D'Arcy has a good word to say for hospital nurses before the Nightingale reforms,

believing that they were far more reliable, devoted and skilled than is commonly thought. We are sceptical as to any closing of Roman hospitals in 335 A.D. until more evidence for it can be produced (see p. ii.). There is a trifling misprint of Nusia for Nursia on page 13, but the book is as a whole carefully printed and is well worth reading.

Diseases of the Heart. By THOMAS LEWIS, C.B.E., M.D., D.Sc., LL.D. Pp. xx., 297. Illustrated. London: Macmillan & Co. Ltd. 1933. Price 12s. 6d.—In this book the author sets forth his clinical teaching on disease of the heart. No attempt has been made to compile an exhaustive work of reference, but the subject is dealt with in the light of the author's own clinical experience. Much pruning and simplification has been effected, and trivial details and named signs find no place in this work. The statements made are, almost without exception, the result of the writer's own observation. Perhaps as a necessary result of this the style is at times rather dogmatic. It is refreshing to see a complete break-away from the time-honoured custom of dealing with diseases of the heart on an anatomical basis, which has been such a stumbling-block to the teaching of scientific cardiology. As the author rightly insists, a systematic classification of heart disease is hardly possible. Throughout the book stress is laid on the one important factor—the functional capacity of the heart and the means of assessing this capacity. As a result the dominant theme is the importance of the correct evaluation of the patient's symptoms. The book is arranged on novel lines. The earlier chapters deal with the symptoms presented by cardiac patients, then follows a consideration of the various anatomical defects that occur in the heart, and after this the main ætiological types of heart disease are described. Attention is paid to the importance of heart disease in operations, anæsthesia and child bearing, and the last chapter deals with diagnosis, prognosis and treatment in general. This book, which may be regarded as the credo of one who has played an important part in placing cardiology on a scientific basis, can be confidently recommended to all interested in diseases of the heart from whatever point of view.

Cardiovascular Pain as a Biochemical Problem. By GORDON LAMBERT, M.D. Pp. xi., 75. Illustrated. London: H. K. Lewis & Co. Ltd. 1933. Price 6s.—This monograph belittles all the theories of the origin of cardiac pain, and suggests that the real explanation will be elucidated by

biochemical means. That some change occurs in the blood and in the muscle cells in this condition has been suggested by many authors; but to say that all further efforts by morbid anatomists are useless is to go too far. Much has been attained by these researches, and the cause has been tied down to the coronary circulation. The fact that the starvation of the heart of fresh blood causes the pain is too firmly established to be overthrown, and perhaps microscopic examination of the smaller coronary vessels may yet reveal sufficient data to explain the cases which at present do not appear to fall under the coronary explanation. The illustrations of polygraph and electrocardiographic tracings in the book are singularly lacking in time markings.

The Common Causes of Chronic Indigestion. By THOMAS C. HUNT, D.M., M.R.C.P. Pp. vii., 341. Illustrated. London: Baillière, Tindall & Cox. 1933. Price 12s. 6d.—This book can be thoroughly recommended to the practitioner and student of clinical medicine, in that it brings together in a very readable form all the latest information on the approach to and study of the phenomena of chronic indigestion. All sides of the subject are presented with thoroughness and considerable judgment, the author being singularly free from any medical or surgical bias. The close co-operation of the radiologist in the investigation of symptoms is insisted upon; and the volume is illustrated by sixteen beautiful reproductions of the X-ray appearances of various pathological conditions affecting the abdomen. There are two valuable chapters at the end on "Principal Methods of Investigation" and on "Case-Taking and Prescriptions." There is also an excellent bibliography, a good index, and the type, general arrangement and headings are excellent.

Operative Surgery. By ALEXANDER MILES, M.D., LL.D., and D. P. D. WILKIE, M.D. Pp. xviii., 590. Illustrated. London: Oxford University Press. 1933. Price 21s.—This book, of about 600 pages, replaces the companion volume to the authors' well-known *Manual of Surgery*. It is intended for those taking classes in operative surgery, candidates for higher surgical examinations, and the "occasional surgeon," but we can assure the authors, and our readers, that not a few professional surgeons will be glad to consult it. The collaboration of no less than sixteen members of the staff of the Edinburgh hospitals has been secured, and surgery of the

various regions of the body divided amongst them. The result is excellent. Wide experience and sane judgment speak from every chapter. The directions are clear and definite, and the illustrations really illustrate; they are neither too many (a common fault in modern books) nor too few. Some very new operations are described, such as lumbar and stellate ganglionectomy, removal of parathyroid tumour, resection of the presacral nerve plexus, and avulsion of the phrenic nerve. We are glad to see a description of Kronlein's operation for orbital tumours, which is missing in some English text-books. There is a particularly good description of splenectomy, and a useful method is offered for the treatment of parotid fistula. We observe that the abdomino-perineal operation for rectal cancer is performed in two stages. Naturally, surgical practice being very individualistic, there are many points we would have written differently. Some very old operations, such as that for the removal of the tongue with part of the mandible, are inserted; we think it would be well to say that these are now seldom, if ever, performed. In the article on cervical rib "rare" cases are mentioned in which the pressure on the nerve is exerted by the first thoracic rib; we think these are commoner than a genuine articulated cervical rib, and Adson's treatment by dividing the scalenus anticus might be mentioned. We would personally have included Sloan's method of opening the upper abdomen. Probably a better method of treating pancreatic cyst than that described is to drain it into the stomach. We do not approve the advice to infold perforations of a gastric ulcer; it is enough to approximate the edges and cover with a flap of omentum. We do not like drainage tubes in the pelvis for this condition (having many years ago lost two patients from intestinal obstruction due to the tube), but greatly prefer a strip of corrugated rubber dam. We are glad to see that suction is advised instead of swabbing out. However, the authors have just as much right to their own opinion, and altogether have produced a very excellent manual, smaller and cheaper than good books on operative surgery usually are.

Radiologic Maxims. By HAROLD SWANBERG, M.D. Pp. 127. Quincy, Illinois, U.S.A.: Radiological Review Publishing Co. 1932. Price $1.50.—This book consists of reprints from the monthly "Radiological Maxims" of the *Radiological Review*. Even for these no originality is claimed: there is a complete absence of useful information, no attempt at

classification, and considerable repetition. A quotation from Pope appears on the title-page: "Half our knowledge we must snatch, not take." The line is appropriately chosen.

A Shorter Orthopædic Surgery. By R. BROOKE, M.S. Pp. viii., 150. Illustrated. Bristol: John Wright & Sons, Ltd. 1932. Price 10s. 6d.—This book has been specially written for the use of masseuses, house surgeons, and those who require a short outline of the methods and treatment usually adopted in orthopædic surgery. Mr. Brooke has adopted a regional method for his descriptions, and although this has its advantages, particularly for those whose medical knowledge is limited, it has also serious drawbacks. As an example one may take tuberculous disease. Of this there is no general description, and so the account of its manifestations in various regions entails needless reduplication. The same criticism applies to rickets, and poliomyelitis receives but scant attention. The author appears to be fonder of the use of plaster in the treatment of tuberculous bones and joints than are many. He even describes the ambulatory treatment of sacro-iliac disease, which most would deem to be unjustifiable. The ways of surgeons vary vastly, but few would find much with which to quarrel in this little book, and it can safely be commended to those for whom it is particularly intended.

The Principles of Treatment of Muscles and Joints by Graduated Muscular Contractions. By MORTON SMART, C.V.O., D.S.O., M.D. Pp. xv., 217. London: Oxford University Press. 1933. Price 15s.—How nice it is to come across a book which really makes one think. After reading this work by Dr. Smart one cannot help giving one's ideas a thorough overhaul. Is our treatment of fractures and sprains all that can be desired? Will our routine of splinting, massage and so forth bear the cold light of reason? How can we avoid pain, stiff joints, and chronic œdema? These are some of the many questions which the author sets out to answer. His reasoning appears to be sound, and few of his readers but will try out some of his methods. Personal experience of the methods of Lucas Championnière leads the reviewer to approach with favour any method which will permit of the early movement of muscles. This the author accomplishes by causing muscular contractions to take place by means of a surging faradic current, the power of which is kept under personal control throughout the treatment. The muscles may

thus be caused to contract so feebly that no movement of the joint occurs, yet the muscle is prevented from becoming adherent; the circulation in the muscle and neighbouring parts is improved; and the muscle itself is kept from wasting. The details of treatment are preceded by a full account of the physiology and pathology of muscle and of the principles upon which treatment is based. This is a book which deserves to be widely read.

Clinical Ophthalmology for House Surgeons and Students. By J. MILES BICKERTON, M.A., B.Ch., and L. H. SAVIN, M.D. Pp. vii., 158. Illustrated. London: H. K. Lewis & Co. Ltd. 1933. Price 7s. 6d.—The authors have attempted to teach the uninitiated a correct technique in the various methods of examining the eye, and to deal adequately, if briefly, with most of its diseases. For so small a book they have achieved their purpose with a surprising degree of success. The subject-matter is clearly set out and easily understood, and the diagrams and illustrations are adequate and helpful. Minor operations are explained fully, there is a useful chapter on "Ophthalmic Formulæ," and an appendix, with full illustrations, of instruments required for ophthalmic operations. As a companion to work in the Out-patient Department and Wards, or as a practical guide for the General Practitioner, this book is admirable.

A Doctor to a Mother. By EARDLEY HOLLAND, M.D., R. C. JEWESBURY, M.D., and WILFRED SHELDON, M.D. Pp. 96. London: Edward Arnold. 1933. Price 1s. 6d.—This intensely practical booklet is written in words easily understandable by the lay mother, for whom it is intended. The first part deals with the mother's care of herself from the onset of pregnancy to the onset of labour, stressing the need for ante-natal care. Next come chapters on breast and artificial feeding and tables and instruction for the feeding of infants after weaning, up to four years of age. This last is a very useful addition and so often omitted in similar books. The remaining chapters are devoted to diseases and the minor ailments of infants, their treatment and prevention, ending with a talk on the milestones in the child's mental and bodily development. The whole book is a model, giving the mother sensible advice but telling her when it is necessary to consult a doctor, without frightening her with alarming symptoms. It is a book which one can recommend to all mothers.

A Standard Classified Nomenclature of Disease. By H. B. LOGIE, M.D. Pp. xvii., 702. New York: Commonwealth Fund. 1933. Price 21s.—The object of this book is to promote a uniform standard classification of disease among American hospitals and medical men. It represents the considered judgment of all the most important medical associations of the United States. "Each disease is described in terms of the tissue or organ where it is principally manifested, and in etiological terms." A numerical code system is incorporated in which the whole history of any given case can be expressed in a series of digits: with great convenience for statistical and similar enthusiasts. Those for whose comfort and use the volume is intended will best know how far it achieves its object.

Surgical Operations. By E. W. HEY GROVES, M.D., B.Sc., M.S. Third Edition. Pp. viii., 263. Illustrated. London: Oxford University Press. 1933. Price 18s.—This text-book makes a most admirable, lucid, and comprehensive compendium of surgery for nurses and young doctors. It has been brought right up to date; describing, for example, modern methods, such as Kirschner's extension apparatus for the treatment of fractures and the use of radium in the treatment of cancer of the tongue. The clarity of the descriptions and sketches and the valuable appendix illustrating all the ordinary surgical instruments are meritorious features of the book. Possibly the time is shortly coming when the surgery of the eye and other specialized work will be better excluded entirely, leaving room for additional details of operations of general surgery. One or two points need attention and amplification. The old-fashioned Barker's apparatus for anæsthesia should be replaced by illustrations and descriptions of the Pitkin type of instrument; and a little more might usefully be said on the *modus operandi* of spinal anæsthesia, for a good deal of the vital supervision of the cases falls into the hands of the nurse. A simple description is given of the method of combating the danger of the inspiration of vomited matter into the lungs during the operation for strangulated hernia. This might well be supplemented by informing the reader how, by spinal anæsthesia, the danger can be entirely avoided. This book fills a very valuable place in the surgical education of the nursing profession.

Editorial Notes

Bristol Medical School.

THE centenary celebrations of the Bristol Medical School will take place on 30th June and 1st July. The programme of events is as follows:—

FRIDAY, JUNE 30TH.

3.30 p.m.	Receptions at the Bristol Royal Infirmary and the Bristol General Hospital by the Presidents.
7 for 7.30 p.m.	Dinner at the University Union.
9.30 p.m.	Reception at the University.

SATURDAY, JULY 1ST.

12 noon.	Ceremony for Conferment of Ordinary and Honorary Degrees in the Great Hall.
1.30 p.m.	Luncheon at the University Union.
3.30 p.m.	Garden Party given by the Sheriff of Bristol, at the Royal Fort in the University.

A history of the Medical School (which was founded in 1833, became the Medical Department of University College, Bristol, in 1879, and the School of Medicine of the University in 1909) has been prepared by Dr. George Parker. This history includes a complete list of alumni since 1833. It may be obtained from Messrs. John Wright & Sons, Bristol. Price 2s. 6d.

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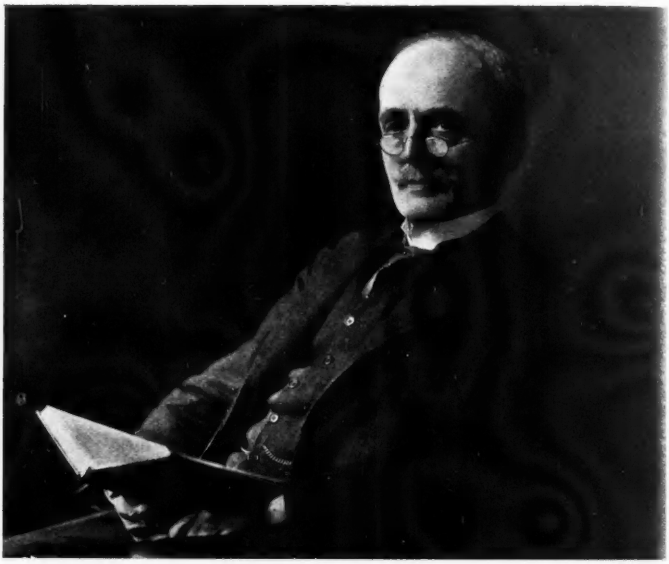
Carey Coombs Memorial.

A COMMITTEE has been formed to promote a memorial to the late Dr. Carey Coombs, and an appeal for subscriptions is being circulated to his numerous friends. If any of these should



D. S. Davies.

fail to receive the appeal, subscriptions may be sent to Dr. H. Elwin Harris, jun., at 13 Lansdown Place, Clifton.

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Royal Society of Medicine.

ON Wednesday, 7th June, the Section of Surgery of the Royal Society of Medicine visited Bristol, and were entertained by the surgical staffs of the Royal Infirmary and of the General Hospital. A short account of the very full and varied programme appears on page 140.

Obituary

DAVID SAMUEL DAVIES, M.D., LL.D.

Late Medical Officer of Health, Bristol.

WE regret to announce the death on 26th March, at Exmouth, of Dr. D. S. Davies, who was for forty-two years Medical Officer of Health of the City and Port of Bristol.

David Samuel Davies was born in Bristol in 1855, and from Bristol Grammar School went to St. Thomas's Hospital, qualifying as M.R.C.S. and L.S.A. in 1879. Two years later, after serving as house-surgeon to St. Thomas's, he became L.R.C.P. and M.B.Lond., and obtained the Cambridge D.P.H. For several years he held office under the Local Government Board as medical inspector on the cholera survey and general sanitary survey of England and Wales, and then in 1886 was appointed M.O.H. for Bristol, in succession to his father, Dr. David Davies. In 1891 he graduated M.D.Lond. in State Medicine, and in 1912 the University of Bristol, for which he lectured and examined in public health, conferred on him its LL.D. During the war he was specialist sanitary adviser to the Southern Command, with the rank of lieutenant-colonel R.A.M.C.(T.), having previously held the rank of surgeon-colonel in the 1st Gloucestershire R.G.A. Volunteers. Dr.

Davies was President of the Bristol Medico-Chirurgical Society in 1900–1. He had held office as President of the Society of Medical Officers of Health in 1906–7 and of the Bath and Bristol Branch of the B.M.A. in the same year.

He married in 1882 Louisa Gertrude Despard, who died in 1929. He married again in 1930 Mary Harriett, widow of the Rev. J. F. E. Faning, who survives him. To her and to his two sons we offer our deep sympathy.

AN APPRECIATION BY SIR ARTHUR NEWSHOLME, K.C.B.

I learnt with much regret of the death of my old friend and fellow-student, Dr. D. S. Davies, who for so many years has been a leader in public health and one of our most distinguished practical epidemiologists.

His life-work was done in Bristol, and that ancient city has cause to be proud of the family of Davies, father and son, who have safeguarded the health of the city for over half a century, who have been largely responsible for the disappearance of typhus (of which disease, imported from Ireland, Bristol was for long an endemic centre), and for practical conquest, achieved during the son's forty years' public health work, over such diseases as typhoid fever and small-pox.

D. S. Davies's investigation of a Clifton outbreak of typhoid fever, due to an infected milk supply, has long been quoted in official writings and text-books as a classic in the methods employed in the investigation and a model in the skill in setting out the results attained. The fullest account of this outbreak is, I believe, contained in the *Journal of Hygiene*. But it was Davies's investigations into local outbreaks of small-pox which, above all, excited the admiration and wonder of his colleagues, who knew the difficulties involved in tracing the source and track of infection. He was, in fact, a veritable sleuth-hound in tracing channels of infection, and in thus limiting outbreaks of small-pox, which but for his superlative skill would have seriously damaged the city he served.

D. S. Davies was a pioneer in the use of the laboratory as an important aid to epidemiological investigation and the prevention of infection. I believe he was one of the earliest, if not the earliest in England, to start a municipal laboratory for the examination of suspected diphtheria smears; and the account of the Clifton outbreak already mentioned shows how early he utilized the Widal reaction in investigating sources and channels of typhoid infection.

For many years we had seldom met; but one always felt

that D. S. Davies was a loyal friend, a wise counsellor, always regardful of the "other fellow's" view, and a man with a single eye to duty.

A STUDENT'S MEMORIES.

During my student career in the Bristol Medical School I regarded D. S. Davies as one of the best, probably the best, of all the teachers upon whom I attended. His tremendous enthusiasm for his subject was infectious, and some of the tales he had to tell of the tracking down of epidemics to their source appealed to me as fascinating. It seems worth while to keep his memory green by telling again the story of the epidemic of typhoid fever in Bristol in the autumn of 1897, and his investigations into its origin.

During October–November 208 cases of enteric fever were notified in the town, in eighty-eight different houses. Some Clifton College houses suffered severely; there were twenty-nine cases in one of them. The outbreak was puzzling, because it was too localized to be due to water, and it followed three different milk rounds. There were a few cases at Bower Ashton and Leigh Woods, but the great bulk were in Clifton and Hotwells. Dr. Davies and his inspectors soon found that many of the infected houses in both these districts were supplied with milk from a farm in Long Ashton, and more than half of the houses on that milk round yielded cases at the rate of about two per house. This seemed clear enough, but this only explained 104 out of 208 cases of the disease, and did not account for eight in Bower Ashton and Leigh Woods. Under the pressure of cross-examination, however, the milkman who served these people admitted that he purchased some milk (which he had no right to do) from the man who distributed the supply from the infected farm, who had no right to sell, and did not account to his employer for the transaction. But even so there were sixteen houses and twenty-two patients with enteric fever who had milk from yet a third source, which was peculiar in that of its three milk rounds two were quite clear, and the third was clear up to the corner of a certain street, but in the very next house there were four cases. Strange to say, at this very point the milkman's route crossed that of the man from the Long Ashton farm. Once again cross-examination showed that a clandestine purchase took place, but that the employer was not told of it. Thus all the cases except ten were accounted for, and those might easily have been infected from little

retail shops. Further investigation showed that the farm where the infection started did not water the milk, but washed their churns in the sewage-polluted water of a brook; the inmates and cows were healthy. Following along the houses supplied, it was interesting to notice that one institution which scalded its milk escaped entirely, and persons who only took milk in tea did not suffer. In one girls' school five drank boiled milk and did not suffer; fifteen took it unboiled, and twelve got the disease.

Amusing episodes came to light. Rumour in the town fixed on the wrong source, and one family in a panic changed their milk supply from a perfectly pure one to that from the infected farm! Many people, including one doctor, loudly advertised that the whole epidemic was due to smells from the River Avon, and the unfortunate M.O.H., in spite of his magnificent demonstration of the truth, was compelled to placate public opinion by having several barrels of disinfectant poured into the river.

A. R. S.

Meetings of Societies.

Bristol Medico-Chirurgical Society.

The sixth meeting of the session was held in the Physiological Lecture Theatre of the University on Wednesday, 8th March, at 8.30 p.m.

Dr. G. B. BUSH and Dr. A. L. TAYLOR showed X-rays and pathological specimens.

Dr. A. L. TAYLOR described one of the specimens and Mr. WRIGHT spoke of the clinical history of the case.

Mr. E. WATSON-WILLIAMS showed two cases of œsophageal obstruction and Mr. WRIGHT discussed the diagnosis in one of them.

Mr. DREW SMYTHE then read a paper on the **"B Coli Infections of the Female Urinary Tract."**

A discussion followed in which the PRESIDENT, Professor STATHAM, Dr. HECTOR, Mr. WALTERS, and Dr. FRANK BODMAN spoke, and Mr. DREW SMYTHE replied.

The seventh meeting of the session was held in the Physiological Lecture Theatre of the University on Wednesday, 13th April, at 8.30 p.m.

Dr. MAYES showed skiagrams and Dr. FRASER pathological specimens.

The following resolutions were passed unanimously:—

1. That it is desirable to afford the friends and patients of the late Dr. Carey Coombs an opportunity to institute a suitable memorial to him.

2. With a view to carrying out this suggestion the following corporate bodies with whom Dr. Coombs was closely associated shall be asked to nominate two representatives each, to form with two representatives from this Society a memorial Committee.

The Bristol University.
The Royal College of Physicians.
The Bristol General Hospital.
The British Medical Association.

3. That the Society's representatives should be Mr. HEY GROVES and Dr. ELWIN HARRIS, junior.

Dr. FRANK BODMAN then read a paper on **"Common Nervous Disorders in General Practice."**

The PRESIDENT complimented Dr. BODMAN on his paper, and a discussion followed in which Dr. NIXON, Dr. CARLETON, Dr. TODD, Dr. CASSON, Mr. GARDEN, Dr. CHARLES, Dr RUDOLPH and Dr. SAXBY spoke.

The last meeting of the session was held in the Physiological Lecture Theatre of the University on 10th May, at 8.30 p.m.

Dr. G. BUSH and Dr. A. L. TAYLOR showed and described skiagrams and pathological specimens respectively.

Mr. A. W. ADAMS read a paper on **"Gastric Surgery,"** which was discussed by the PRESIDENT, Mr. CLIFFORD MOORE, Dr. RICHARD CLARKE, Mr. CHITTY and Mr. E. WATSON-WILLIAMS and Mr. ADAMS replied.

Miss SYLVIA WIGODER then read a short paper on "**The Early Results of Radium Treatment in Operable Carcinoma.**"

This was discussed by the PRESIDENT, Mr. CLIFFORD MOORE, Dr. FARESLEY BROWN, Mr. E. WATSON-WILLIAMS, and Mr. DUNCAN WOOD.

Miss WIGODER replied.

Bath and Bristol Surgical Club.

The Bath and Bristol Surgical Club met at the Hospital for Sick Children, Great Ormond Street, London, on 2nd June.

Mr. OSWALD ADDISON performed an operation for closure of cleft palate in a child of two.

Mr. BARRINGTON WARD removed the spleen for relief of acholuric jaundice in a boy of twelve.

Mr. TYRRELL GRAY performed Rammstedd's operation on two babies, and Bevan's operation on a boy with undescended left testicle.

A large collection of orthopædic cases and general skiagrams and specimens was demonstrated. The members subsequently dined together at the Dorchester Hotel.

Visit of the Section of Surgery of the Royal Society of Medicine.

On Wednesday morning, 7th June, fourteen members of the Surgical Section of the Royal Society of Medicine came to the Bristol Royal Infirmary for the Surgical Meeting.

Dr. TODD gave a short discourse on "**The Chemotherapeutic Treatment of Cancer.**" Following this he demonstrated cases in which growths remained absent for three or four years after treatment, including among others :—

1. Sarcoma of the upper jaw.
2. Lympho-sarcoma of the left side of the neck.

3. Recurrent cancer of the rectum, overcome by radium treatment.

4. Cases of Hodgkin's disease in which the remaining glands were only very tiny ones.

Mr. C. F. WALTERS showed two patients on whom he had performed adrenalectomy.

Mr. H. CHITTY showed a girl with a scarred neck—the result of actinomycosis—which had been cured by tincture of iodine in milk. He reported that in fourteen cases only one had not been cured by this treatment. He then discussed the operation for Dupuytren's contracture.

Mr. W. A. JACKMAN showed a patient in whom only two digits were present on either hand. In addition he showed two cases of anomalous bone infections.

Professor RENDLE SHORT removed a carcinoma of the rectum by perineal excision, showed two patients on whom he had successfully operated for exophthalmos, and a case of ectopia vesicæ successfully treated by transplantation of the ureters and excision of the bladder.

Mr. A. WILFRID ADAMS showed operation specimens of tubercular and carbunculous kidneys and a stomach with four active ulcers along the lesser curvature.

Some of the members then visited the Ear, Nose and Throat Theatre to inspect the new operating table.

After lunch at the Infirmary the visitors went on to the General Hospital and were received by the Surgical Staff.

A number of cases of injury and disease of the spine were shown, including several compression fractures of the bodies of the vertebræ, treated by fixation in plaster in a position of hyper-extension; a girl of 20 who had a fracture dislocation of the lumbar vertebræ treated by open reposition, followed by a bone graft, with complete recovery. An interesting discussion took place on the relative advantages of fixation of compression fractures of the spine by plaster or by an immediate bone graft. Another case which provoked some discussion was that of a man of 50 who had a disease of the third lumbar vertebra, which had caused almost complete disappearance of the body. Probably this was a case of myeloma, and under the action of deep X-rays great improvement had taken place. The patient was on the new pattern of the reversible spinal bed, and the visitors showed great

interest in the demonstration of his being turned over. Other cases shown were: a recurrent dislocation of the shoulder, treated by a fascial sling; a girl with a myeloma of the lower end of the femur, treated by excision and bone grafting; two infants with large cystic swellings of the buttock, probably teratomata.

Dr. ROGERS showed a number of recent specimens in the pathological museum.

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Director of the Commission on Medical Education (3)	1 volume.
E. Wilfred Fish, Esq. (4)	2 volumes.
General Medical Council (5)	3 ,,
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Professor E. W. Hey Groves (7)	7 volumes.
London School of Hygiene and Tropical Medicine (8)	1 volume.
Michell Clarke (9)	1 ,,
Middlesex Hospital (10)	1 ,,
Dr. George Parker (11)	2 volumes.
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Unbound periodicals have also been received from Professor E. W. Hey Groves.

THE ONE HUNDRED AND FORTY-FOURTH LIST OF BOOKS.

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